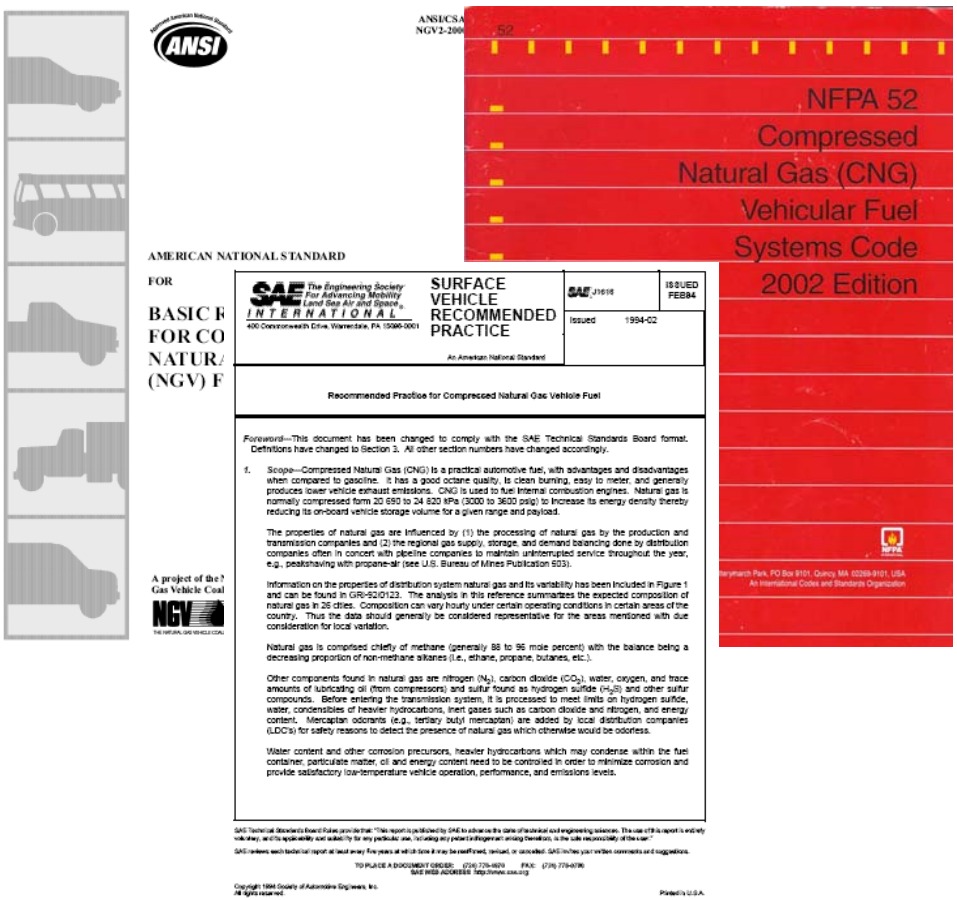
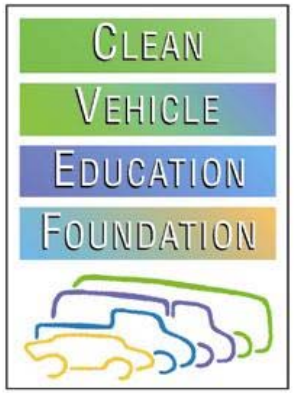
Codes and Standards Update



Doug Horne &
Hank Seiff

NGVTF
August 4, 2005

CLEAN
VEHICLE
EDUCATION
FOUNDATION

The 

provides representation to C&S committees that are reviewing existing guidelines and drafting new ones that may impact the utilization of alternative fuels (particularly CNG and LNG) in transportation vehicles and fueling stations

to NREL and U.S. Department of Energy Energy Efficiency and Renewable Energy

Codes and Standards development provides alternative fuel technology transfer involving:

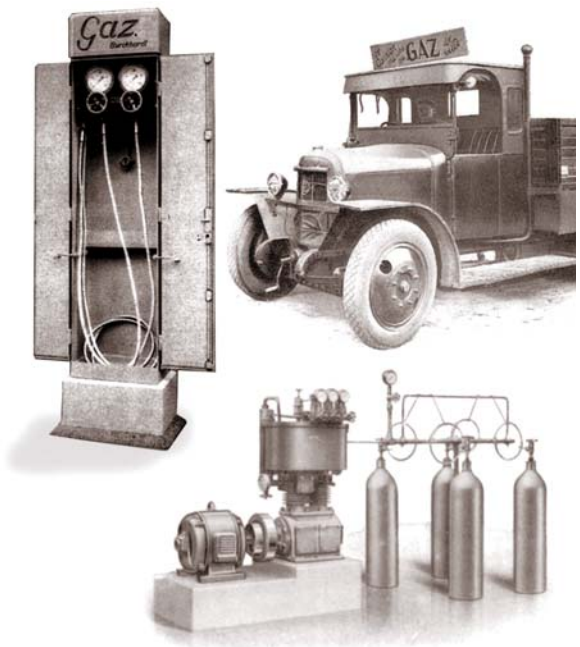
- industry
- end users (vehicles and infrastructure)
- government agencies and national laboratories

Good NGV Codes and Standards are Critical to:

- the building of alternative fuel vehicles and infrastructure
- the use of alternative fuels by fleets
- the goal of petroleum displacement
- a smooth transition to a potential hydrogen future

Without good C&S,

We're Behind the Times!



Standards/Guidelines-Setting Organizations

(Not All-Inclusive)

NFPA – National Fire Protection Association
Uniform Fire Code
International Fire Code
FTA-DOT – Federal Transit Administration
NHTSA-DOT – National Highway Traffic Safety Administration
FMCSA-DOT – Federal Motor Carrier Safety Administration
DOT HM Regulations (Transportation and Reference for LNG Storage Vessels)
EPA – Environmental Protection Agency
SAE – Society of Automotive Engineers
CSA-International
CGA – Compressed Gas Association
ANSI – American National Standards Institute
ISO – International Organization for Standardization
ECE - Economic Commission of Europe
OIML – International Organization of Legal Metrology
ASME Boiler and Pressure Vessel Code (Storage Vessels)
California Code of Regulations
Railroad Commission of Texas
PA DOT
AAMVA – American Association of Motor Vehicle Administrators
Massachusetts Registry of Motor Vehicles
CVSA – Commercial Vehicle Safety Alliance

We'll cover only a few C&S issues you should be aware of:

NFPA 52

National Fire Protection Association
The authority on fire, electrical, and building safety

SAE

The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL

ANSI/CSA

CSA INTERNATIONAL
8501 East Pleasant Valley Rd.
Cleveland, Ohio 44131

NFPA 52

National Fire Protection Association
The authority on fire, electrical, and building safety

Present Title: Compressed Natural Gas Vehicular Fuel Systems Code

New (2005) Title: Vehicular Fuel Systems Code

Major Changes:

- **Incorporate LNG (NFPA 57)**
- **Include Gaseous and Liquid Hydrogen**
  - **Ch. 13 - LH_2 Engine Fuel Systems "will be put on hold as new material for next edition. This is a developing technology and it is not clear the code requirements are required yet."**

NFPA 52

National Fire Protection Association
The authority on fire, electrical, and building safety

Major Problem:

A number of requirements state that a final stage manufacturer must get its design approved by and/or follow the engineering recommendations of the original equipment manufacturer (OEM).

This may be impossible to achieve since a number of OEM's are leaving the NGV arena and/or would not provide approval or engineering recommendation for designs of the final stage manufacturer.

This amounts to a restraint of trade since the final stage manufacturer may either be considered a competitor or the OEM could refuse to take responsibility/liability for approving another's design.

This requirement does not add to the safety of the design of the alternative fuel vehicle. The final stage manufacturer should have responsibility and liability for its own design. NFPA 52 should include performance requirements for safety and not get involved in contractual matters

NFPA 52

National Fire Protection Association
The authority on fire, electrical, and building safety

What we are doing about it:

Since this document was approved at the June NFPA meeting, CVEF filed an appeal with the NFPA Standards Council to seek reversal of the Technical Committee's actions.

The appeal was heard by the Standards Council on July 25 at their meeting in Boston.

We will report on the results at the NGVTF meeting.

SAE

SAE The Engineering Society For Advancing Mobility Land Sea Air and Space® INTERNATIONAL

Truck and Bus Alternative Fuels Subcommittee

- New Chair – Doug Horne
- Responsible for:

  Published Recommended Practices:

  - J2406 - CNG Powered Medium and HD Trucks
  - J2343 - LNG Powered HD Vehicles
  - J2645 - LNG Vehicle Metering and Dispensing Systems

SAE

SAE The Engineering Society For Advancing Mobility Land Sea Air and Space® INTERNATIONAL

Truck and Bus Alternative Fuels Subcommittee

- Responsible for:

  Documents in Progress:

  - J1740 - LNG Vehicle Fueling Connectors
  - J2699 - LNG Vehicle Fuel
  - J2700 - LNG Vehicle Fuel Tanks

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Automotive Technical Committee

- **Responsible for:**

  Published ANSI Standards:

  - NGV1- CNG Vehicle Fueling Connection Devices
  - NGV2 - Basic Requirements for CNG Vehicle Fuel Containers
  - NGV3.1- Fuel System Components for Natural Gas Powered Vehicles
  - NGV4.1- NGV Dispensing Systems
  - NGV4.2 - Hoses for NGVs and Dispensing Systems

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Automotive Technical Committee

- **Responsible for:**

  Published ANSI Standards:

  - NGV4.4 - Breakaway Devices for Natural Gas Dispensing Hoses and Systems
  - NGV4.6 - Manually Operated Valves for Natural Gas Dispensing Systems
  - NGV4.8 - NGV Fueling Station Reciprocating Compressor Guidelines
  - PRD1 - Basic Requirements for Pressure Relief Devices for NGV Fuel Containers

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Automotive Technical Committee

- **Responsible for:**

  Documents in Progress:

  - HGV2 - Compressed Hydrogen Vehicle Fuel Containers
  - HGV4.1 - HGV Dispensing Systems
  - HGV4.2 - Hoses for Compressed Hydrogen Vehicles & Dispensing Systems
  - HGV4.3 - Temperature Compensation Systems for Gaseous Hydrogen Vehicle Fueling Stations
  - HGV4.4 - Breakaway Devices for Hoses used in Compressed Hydrogen Vehicle Fueling Stations

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Cleveland, Ohio 44131

Automotive Technical Committee

- **Responsible for:**

  Documents in Progress:

  - HGV4.5 - Priority and Sequencing Equipment for Hydrogen Gas Vehicle Fueling
  - HGV4.6 - Manually Operated Valves used in Gaseous Hydrogen Vehicle Fueling Stations
  - HGV4.7 - Automatic Valves for use in Gaseous Hydrogen Vehicle Fueling Stations
  - NGV4.8 - HGV Fueling Station Compressors
  - HPRD1 - Pressure Relief Devices for HGV Fuel Containers

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Automotive Technical Committee

- **Responsible for:**

  Potential Documents:

  - HCNG (CNG/H_2 Blends)

C&S Work is Essential to a Successful NGV Industry and to Provide a Smooth Transition to Hydrogen.

It Brings Together Industry, Government, National Labs, Local Authorities and all concerned to assure Safe and Economical Transportation.

With Good C&S, We're Up to Date!

Dodge Charger CNG Concept Vehicle